



# LC Science Tracer Bullet

Science Reference Section, Science and Technology Division  
Library of Congress, 10 First Street, S.E., Washington, D.C. 20540

LIBRARY OF CONGRESS-SCIENCE AND TECHNOLOGY D  
Halocarbons and the stratospher  
LC 33.10:89-10



31813001498590

ISSN 0090-5232

## HALOCARBONS AND THE STRATOSPHERIC OZONE LAYER Compiled by George D. Havas

TB 89-10

July 1989

**SCOPE:** This guide lists information sources which deal with the deleterious effect of halocarbons (fluorocarbons, chlorocarbons, and chlorofluorocarbons (CFCs)) on the stratospheric ozone layer which shields the earth and its inhabitants from excessive ultraviolet radiation from the sun. Chlorofluorocarbons are compounds, similar to hydrocarbons, in which most, or all, of the hydrogen atoms have been replaced by various combinations of fluorine and chlorine atoms. Not intended to be a comprehensive bibliography, this guide is designed--as the name of the series implies--to put the reader "on target."

### INTRODUCTIONS TO THE TOPIC

Cicerone, Ralph J. Chlorofluorocarbons. In McGraw-Hill encyclopedia of science and technology. v. 8. New York, McGraw-Hill, 1987. p. 303. Q121.M3 1987\*

Clark, Ellen, and Max G. Gergel. Halogenated hydrocarbons. In McGraw-Hill encyclopedia of science and technology. v. 8. New York, McGraw-Hill, 1987. p. 303-304. Q121.M3 1987\*

Global environment resources: the ozone prob  
Horst Siebert. Frankfurt am Main, La  
(Staatliche Allokationspolitik im Ma  
System, Bd. 2)

Organisation for Economic Co-  
Environment Committee. Fluo  
worldwide production, use and  
interim report. Prepared by  
delegate groups to the Envi  
Organisation for Economic Co-  
1976. 41 p.

\*Available in reference collection, Sc

Prinn, Ronald G. Atmospheric chemistry. In McGraw-Hill encyclopedia of science and technology. v. 2. New York, McGraw-Hill, 1987. p. 171-175. Q121.M3 1987\*

----- Atmospheric ozone. In McGraw-Hill encyclopedia of science and technology. v. 2. New York, McGraw-Hill, 1987. p. 185-188. Q121.M3 1987\*

Sheft, Irving. Fluorocarbons. Fluorocarbon derivatives. In McGraw-Hill encyclopedia of science and technology. v. 7. New York, McGraw-Hill, 1987. p. 214-216. Q121.M3 1987\*

Wagner, Frank. Fluorocarbon. In McGraw-Hill encyclopedia of science and technology. v. 7. New York, McGraw-Hill, 1987. p. 217-218. Q121.M3 1987\*

**SUBJECT HEADINGS** used by the Library of Congress, under which publications on this subject can be located in most card, book, and online catalogs include the following:

AEROSOLS--ENVIRONMENTAL ASPECTS (Highly relevant)  
ATMOSPHERIC CHEMISTRY (Highly relevant)  
ATMOSPHERIC OZONE (Highly relevant)  
ATMOSPHERIC OZONE--ENVIRONMENTAL ASPECTS (Highly relevant)  
ATMOSPHERIC OZONE--REDUCTION (Highly relevant)  
ATMOSPHERIC OZONE--RESEARCH (Highly relevant)  
CHLOROFLUOROCARBONS (Highly relevant)  
CHLOROFLUOROCARBONS--GOVERNMENT POLICY (Highly relevant)  
CHLOROFLUOROCARBONS--ENVIRONMENTAL ASPECTS  
(Highly relevant)  
FLUOROCARBONS (Highly relevant)  
FLUOROCARBONS--ENVIRONMENTAL ASPECTS (Highly relevant)  
HALOCARBONS (Highly relevant)  
OZONE LAYER (Highly relevant)  
OZONE LAYER DEPLETION (Highly relevant)  
STRATOSPHERE--(Highly relevant)  
STRATOSPHERE--RESEARCH (Highly relevant)  
AEROSOLS (Relevant)  
ATMOSPHERE, UPPER (Relevant)  
CLIMATIC CHANGES (Relevant)  
GREENHOUSE EFFECT, ATMOSPHERIC (Related)

**TEXTS ON CHEMICAL ASPECTS**

Banks, R. E. Fluorocarbons and their derivatives. 2nd ed. London, Macdonald & Co., 1970. 245 p. QD412.F1B3 1970

Rudner, Merritt Allen. Fluorocarbons. New York, Reinhold Pub. Corp., 1958. 238 p. QD181.F1R86

TEXTS

Assembly of Mathematical and Physical Sciences (U.S.). Committee on Impacts of Stratospheric Change. Protection against depletion of stratospheric ozone by chlorofluorocarbons. Committee on Impacts of Stratospheric Change, Assembly of Mathematical and Physical Sciences, Committee on Alternatives for the Reduction of Chlorofluorocarbon Emissions, Commission on Sociotechnical Systems. Washington, National Academy of Sciences, 1979. 392 p.

TD887.C47N37 1979

Mooz, W. E., Kathleen A. Wolf, and Frank Camm. Potential constraints on cumulative global production of chlorofluorocarbons. Prepared for the U.S. Environmental Protection Agency. Santa Monica, Calif., Rand, 1986. 69 p.

"R-3400 EPA."

HD9660.F562M66 1986

Stoel, Thomas B., Jr., Alan S. Miller, and Breck Milroy. Fluorocarbon regulation: an international comparison. Lexington, Mass., Lexington Books, c1980. 306 p.

K3672.5.S76

Technical options for reducing chlorofluorocarbon emissions. W. E. Mooz and others. Santa Monica, Calif., Rand, 1982. 187 p.

TD887.C47T4 1982

"Prepared for the Environmental Protection Agency."

"R-2879-EPA."

CONFERENCE PROCEEDINGS

Aerosols: research, risk assessment, and control strategies: proceedings of the second U.S.-Dutch International Symposium, Williamsburg, Virginia, May 19-25, 1986, by S. D. Lee and others. Chelsea, Mich., JAI Press, 1986. 1221 p.

TP2

"Organized by the U.S. Environmental Protection Agency and the Ministry of Housing, Planning, and Environment of The Netherlands."

Aerosols and their climatic effects. Gerber, Adarsh Deepak. Hampden, Mass., 1983. 297 p.

Proceedings of a meeting 18-28-30, 1983, sponsored by World Meteorological Organization (WMO), American Chemical Society (ACS) and the International Association of Pure and Applied Physics, Radiative Transfer and Aerosols.

Atmospheric ozone research and its policy implications: proceedings of the 3rd U.S.-Dutch International Symposium, Nijmegen, The Netherlands, May 9-13, 1988. Organized by the Environmental Protection Agency, United States of America, and the Ministry of Housing, Physical Planning, and Environment, The Netherlands. Edited by T. Schneider and others. Amsterdam, New York, Elsevier, 1989. 1047 p. (Studies in environmental science, 35)

TD885.5.085A86 1989\*

Fluostrat '78 Symposium (1978: Brighton, England). Chloro-fluorocarbons in the environment: the aerosol controversy. Editors: T. M. Sugden and T. F. West. Chichester, Eng., Ellis Horwood for the Society of Chemical Industry; New York, Distributor, Halsted Press, 1980. 183 p.

TD887.C47F57 1978

Held by the Society of Chemical Industry, Oct. 5-6, 1978.

International Radiation Symposium (1988: Lille, France). IRS '88: current problems in atmospheric radiation: proceedings of the International Radiation Symposium, Lille, France, 18-24 August 1988. Edited by Jacqueline Lenoble and Jean-Francois Geleyn. Hampton, Va., A. Deepak Pub., 1989. 653 p.

QC912.3.I57 1988

Co-sponsored by International Association of Meteorology and Atmospheric Physics, and other organizations.

The Ozone layer: proceedings of the meeting of experts designated by governments, intergovernmental and non-governmental organizations on the ozone layer organized by the United Nations Environment Programme in Washington, DC, 1-9 March 1977. Editor, Asit K. Biswas. Oxford, Eng., New York, Published for the United Nations Environment Programme by Pergamon Press, 1979. 381 p. (Environmental sciences and applications, v. 4)

QC879.72.096 1979

#### GOVERNMENT PUBLICATIONS

Great Britain Directorate of Air, Noise, and Wastes. Chloro- and their effect on stratospheric ozone: London, H. M. Stationery Off., 1979.

paper, no. 15) TD887.C47G73 1979

Department of the Environment, Central Environmental Pollution.

ledge of the upper atmosphere: an processes that control ozone and other nt trace gases. R. T. Watson and tional Aeronautics and Space Adminis- and Technical Information Branch or sale by the National Technical 1986. 134 p. (NASA reference publica-

QC879.7.P74 1986

- United States. Congress. House. Committee on Energy and Commerce. Subcommittee on Oversight and Investigations. Ozone layer depletion: hearing before the Subcommittee on Oversight and Investigations of the Committee on Energy and Commerce, House of Representatives, One Hundred First Congress, first session, May 15, 1989. Washington, U.S. Govt. Print. Off., 1990. 1079 p. KF27.E5546 1990
- United States. Congress. Senate. Committee on Aeronautical and Space Sciences. Subcommittee on the Upper Atmosphere. Chlorofluorocarbon effects and regulations: hearing before the Subcommittee on the Upper Atmosphere of the Committee on Aeronautical and Space Sciences, United States Senate, Ninety-fourth Congress, second session, December 15, 1976. Washington, U.S. Govt. Print. Off., 1977. 476 p. KF26.A327 1976b
- United States. Congress. Senate. Committee on Aeronautical and Space Sciences. Subcommittee on the Upper Atmosphere. Stratospheric ozone research and effects: hearings before the Subcommittee on the Upper Atmosphere of the Committee on Aeronautical and Space Sciences, United States Senate, Ninety-fourth Congress, second session, February 25 and March 1, 1976. Washington, U.S. Govt. Print. Off., 1976. 580 p. KF26.A327 1976
- United States. Congress. Senate. Committee on Environment and Public Works. Subcommittee on Environmental Protection. Ozone depletion, the greenhouse effect, and climate change: hearings before the Subcommittee on Environmental Pollution of the Committee on Environment and Public Works, United States Senate, Ninety-ninth Congress, second session, June 10 and 11, 1986. Washington, U.S. Govt. Print. Off., 1986-1987. 2 v. (S. hrg., 99-723, 100-3) KF26.E645 1986a
- United States. Congress. Senate. Committee on Environment and Public Works. Subcommittee on Hazardous Substances. The Global Environment: 1988: joint hearings before the Subcommittee on Hazardous Wastes and Toxic Substances and the Subcommittee on Environmental Protection of the Committee on Environment and Public Works, United States Senate, One Hundredth Congress, second session, on S. 2666 ... September 14 and 16, 1988. Washington, U.S. Govt. Print. Off., 1988. 415 p. (S. hrg., 100-843) KF26.E65 1988f
- United States. Congress. Senate. Committee on Environment and Public Works. Subcommittee on Toxic Substances and Environmental Oversight. The effect of chlorofluorocarbons on the ozone layer: hearing before the Subcommittee on Toxic Substances and Environmental Oversight of the Committee on Environment and Public Works, United States Senate, Ninety-seventh Congress, first session, July 23, 1981. Washington, U.S. Govt. Print. Off., 1981. 362 p. "Serial no. 97-H25." KF26.E678 1981a

United States. Federal Task Force on Inadvertent Modification of the Stratosphere. Fluorocarbons and the environment: report of Federal Task Force on Inadvertent Modification of the Stratosphere (IMOS). Washington, Council on Environmental Quality; U.S. Govt. Print. Off., 1975. 109 p.  
"NSF 75-403." QC881.2.S8U54 1975

ABSTRACTING AND INDEXING SERVICES that index relevant periodical articles and other literature are listed below. Some terms are suggested as aids in searching.

Applied Science & Technology Index (1913-) Z7913.I7\*

See: Atmospheric ozone, Depletion of  
Chlorofluorocarbons  
Chlorofluoromethanes  
Fluorocarbons

Environment Abstracts (1971-) GF1.E553\*

See: Chlorofluorocarbons  
Chlorofluoromethanes  
Fluorinated Hydrocarbons  
Halocarbons

Environmental Periodicals Bibliography (1972-) Z5863.E57E58\*

See: Chlorofluorocarbons

General Science Index (1978-) Z7401.G46\*

See: Air--Halocarbon content  
Fluorocarbons  
Halocarbons  
Ozone

Magazine Index (1980-) Available in several formats in LC

See: Chlorofluorocarbons  
Halocarbons

Meteorological and Geostrophysical Abstracts (1950-)  
QC851.A62\*

See: Chlorofluorocarbons in the Atmosphere  
Ozone-aerosol Relationships  
Ozone-atmospheric Pollution Relationships  
Ozone Destruction

Pollution Abstracts (1970-) TD172.P65\*

See: Ozone, Chlorofluorocarbons  
Ozone, Stratosphere  
Stratosphere, Boundary Layers  
Stratosphere, Ozone

Readers' Guide to Periodical Literature (1900-) AI3.R45

See: Chlorofluorocarbons  
Fluorocarbons  
Halocarbons

REPRESENTATIVE PERIODICAL ARTICLES

- Benedick, Richard E. A landmark global treaty at Montreal.  
Natural resources journal, v. 28, summer 1988: 427-429.  
K14.A868
- Blegen, Bryce. International cooperation in protection of  
atmospheric ozone: the Montreal Protocol on Substances that  
Deplete the Ozone Layer. Denver journal of international  
law and policy, v. 16, winter/spring 1988: 413-428.  
JX1.D38
- Europe agrees on chlorofluorocarbons. Chemistry and industry,  
no. 7, Apr. 6, 1987: 215. TP1.S6213
- Global accord will cut CFC use 50% by 1999. Chemical &  
engineering news, v. 65, Sept. 21, 1987: 7. TP1.C35
- Historic ozone treaty signed--at last. New scientist, v. 115,  
Sept. 24, 1987: 22. Q1.N52
- Keeping CFCs under control. Design news, v. 44, Dec. 19, 1988:  
51, 55. TA175.D4
- Nangle, Orval E. Stratospheric ozone: United States regulation  
of chlorofluorocarbons. Boston College environmental  
affairs law review, v. 16, spring 1989: 531-580. K5.N83
- Ozone destruction--what it means to our health. Not man apart,  
v. 17, May/June 1987: 9. QH540.N6
- Rowland, F. Sherwood. Can we close the ozone hole? Technology  
review, v. 90, Aug./Sept. 1987: 50-58. T171.M47
- Chlorofluorocarbons and the depletion of str  
ozone. American scientist, v. 77, Jan./Feb. 1989
- Sinclair, Lani. New WRI  
protecting ozone layer.  
environment, research and  
51-53.
- Substitutes for CFCs. Not ma
- Zurer, Pamela S. Arctic o  
concludes outlook is blea  
v. 67, Mar. 6, 1989: 29-3



REPORTS and other types of information are indexed in:

Government Reports Annual Index (1965-) Z7405.R4G64\*

See: Chlorocarbons  
Chlorofluorocarbons  
Fluorocarbons  
Fluorohydrocarbons

International Aerospace Abstracts (1961-) TL500.I57\*

See: Fluorocarbons  
Ozone Depletion

Scientific and Technical Aerospace Reports (1963-) TL500.S35\*

See: Fluorocarbons

SELECTED TECHNICAL REPORTS, sold by the National Technical Information Service, Springfield, Virginia 22161, include the following:

Hoffman, John S. Assessing the risks of trace gases that can modify the stratosphere. Volume 6. Technical Support Documentation Production Projections. Washington, U.S. Environmental Protection Agency, Dec. 1987. 346 p.  
PB 88-231071\*\*

Review of EPA's assessment of the risks of stratospheric modification. Review of the Stratospheric Ozone Subcommittee of the Science Advisory Board. Washington, U.S. Environmental Protection Agency, Mar. 23, 1987. 34 p.  
PB 88-247226\*\*

Thompson, T. M., W. D. Komhyr, and E. G. Dutton. Chlorofluorocarbon-11, -12, and nitrous oxide measurements at the NOAA/GMCC (National Oceanic and Atmospheric Administration/Geophysical Monitoring for Climatic Change) baseline stations (16 September 1973 to 31 December 1979). Boulder, Colorado, National Oceanic and Atmospheric Administration, June 1985. 124 p.  
PB 86-109584\*\*

SELECTED MATERIALS available in the Science Reading Room pamphlet boxes include:

Can we repair the sky? Consumer reports, vol. 54, May 1989: 322-326.

Gannes, Stuart. A down-to-earth job: saving the sky. Fortune, vol. 117, Mar. 14, 1988: 65-67.

---

\*\* Available in the microform collection, Science Reading Room

Gushee, David E. Stratospheric ozone depletion: regulatory issues. Boca Raton, Fla., Social Issues Resources Series, c1989-. 7 p. (The Atmosphere crisis, vol. 1, art. no. 89)

Reprinted from CRS issue brief: Stratospheric ozone depletion: regulatory issues. Feb. 1, 1989.

Shea, Cynthia Pollock. Protecting life on earth: steps to save the ozone layer. Washington, Worldwatch Institute, 1988. 46 p.

U.S. General Accounting Office. Stratospheric ozone: EPA's safety assessment of substitutes for ozone-depleting chemicals; report to the Chairman, Committee on Energy and Commerce, House of Representatives. Feb. 13, 1989. Washington, G.A.O., 1989. 66 p.

"GAO/RCED-89-49."

#### ADDITIONAL SOURCES OF INFORMATION

American Meteorological Society  
45 Beacon Street  
Boston, Massachusetts 02108  
Telephone: (617) 227-2425

United Nations  
World Meteorological Organization  
Caise postale No. 5  
CH-1211 Geneve 20  
Switzerland  
Telephone: (41 22) 34 64 00

U.S. Environmental Protection Agency  
Office of Public Affairs (A-107)  
401 M Street, S.W.  
Washington, D.C. 20460  
Telephone: (202) 382-4361